

## ENERGY FILTER MULTIPLEXING

### ABSTRACT OF THE DISCLOSURE

5           The present invention pertains to a technique of electron spectroscopic imaging that is easy to perform and cost effective. This technique allows for spatial resolution enhancement of electron beam semiconductor inspection systems (for example a critical dimension scanning electron microscope CD-SEM) as well as to obtain useful physical or chemical information on the investigated specimen. The technique involves a high pass  
10   energy filter that is alternately set, or multiplexed, at two energies. For an inspected area on a specimen, the detected intensity level at the higher energy setting is subtracted from the intensity level at the lower energy setting. The obtained differential value corresponds to electrons having energy within the range of the first and second filter settings. This obtained differential value is used to generate an image of the specimen for  
15   inspection purposes.